

## NEW SOUTH WALES FUNGI.

BY D. McALPINE.

*(Communicated by R. T. Baker, F.L.S.)*

(Plates XXVI.-XXVIII.)

The following seven fungi sent by Mr. R. T. Baker, of the Technological Museum, occur on the leaves or bark of indigenous plants. Four of them are new to science, two are new to the colony, and one has been previously recorded from a different locality.

## FUSARIUM BYSSINUM, n.sp.—Byssoid Fusarium.

(Plate XXVI., figs. 1-2.)

Hypophyllous. Pustules pulvinate, gregarious, here and there confluent, firm, byssoid at base, at first flesh-colour finally bright orange-yellow, often with small cup-shaped depressions on top, generally circular and 2-3 mm. in dia. Hyphæ hyaline, densely compacted, slender, about  $1-1\frac{1}{2}\mu$  thick. Conidia hyaline, fusiform, straight, pointed at both ends, continuous, rarely one-septate,  $11-14 \times 1\frac{1}{2}-2\mu$ .

On leaves of *Desmodium* sp. July. Murwillumbah, N.S.W. (Baker, 2).

This is a very striking form, from its size and bright appearance. *Ramularia Desmodii*, Cke., (*Fusisporium pubescens*, B. & C.), and *Cercospora Desmodii*, Ell. & Kell., occur on the leaves of this genus, but are quite distinct. There is an orange Fusarium (*F. hypochreoides*, Cke. & Mass.) on fading leaves of *Ficus* in Queensland, but the pustules are much smaller and the conidia stouter. In *F. aurantiacum*, Sacc., the conidia are straight and not pointed at the ends.

MELIOLA AMPHITRICHIA, Fries.—**Amphitrichous Meliola.**

Sporidia up to  $50 \times 19 \mu$ .

On leaves of *Dysoxylon* sp.; commonly on under surface, slightly on upper. July. Murwillumbah, N.S.W. (Baker, 3).

Already described on *Dysoxylon rufum*, Benth., from Richmond River in P.L.S.N.S.W. (2) x. 1895.

ASTERIDIUM EUCALYPTI, Cooke & Mass.—**Eucalyptus Asteridium.**

(Plate xxvi., figs. 3-4.)

Spot-like, radiating, superficial, black, minute patches, gregarious, often confluent, on upper and under surfaces of leaf. *Hyphæ* dark brown, thick-walled, much branched, septate, average  $9-10 \mu$  broad, with numerous short, stout, ultimate branchlets usually uniseptate. *Perithecia* minute, hemispherical or discoid, flattened, black, but dark brown under microscope, composed of radiating, transversely septate filaments, margin scolloped,  $80-94 \mu$  broad by  $84-88 \mu$  deep. *Asci* pyriform, 4-spored. *Sporidia* elongated, ellipsoid, triseptate, constricted, brown, one segment enlarged,  $26 \times 11 \mu$ .

On leaves of Red Apple (? *Memecylon* sp.). July. Murwillumbah, N.S.W. (Baker, 4).

Only found hitherto in Victoria on dead leaves of *Eucalyptus amygdalina*, and described in Grev. xvi. 1888, p. 74.

ASTERINA TUBERCULATA, n.sp.—**Tuberculate Asterina.**

(Plate xxvi., figs. 5-8.)

Hypophyllous, causing the shining leaves to become entirely or partially dirty yellow on the affected side. Spots suborbicular, black, gregarious, often contiguous, with radiating, somewhat superficial mycelium and minute, black, gregarious, punctiform perithecia. *Hyphæ* next to matrix colourless to greyish, septate, branched, creeping on or immediately beneath epidermis,  $4-5\frac{1}{2} \mu$  broad. Dark brown hyphæ thick-walled, septate, branched, with numerous, undivided tubercles representing ultimate branch-

lets,  $5\frac{1}{2}$ - $7\frac{1}{2}\mu$  broad. *Perithecia* membranaceous, generally orbicular, sometimes elongated-oval ( $260 \times 140 \mu$ ), flattened, composed of radiating transversely divided filaments, with adherent fibrils, brown, variable in size, 56-188  $\mu$  in diameter. *Asci* ovate, 8-spored,  $56\text{-}84 \times 41\text{-}52 \mu$ . *Sporidia* dark brown, elliptic, uniseptate, slightly constricted,  $33\text{-}37 \times 17\text{-}19 \mu$ .

On leaves of *Geitonoplesium cymosum*, Cunn. July. Murwillumbah, N.S.W. (Baker, 5).

The sporidia are at first colourless, then olive-green, and finally of a very dark brown colour. When the asci are treated with potassium-iodide iodine the sporidia, as well as the contents of the inner wall, are a beautiful chestnut-brown, and outside of that a pale green colour.

MELIOLA DENTICULATA, n.sp.—Dentate Meliola.

(Plate XXVI., figs. 9-13.)

Epiphyllous. Minute, black, superficial, scattered, velvety spots. *Hyphæ* next to matrix, creeping, colourless, septate, branched, forming a gelatinous network attaching the fungus to its host, very slender and gradually thickening as they merge into the brown filaments, 2-4  $\mu$  broad. Brown hyphæ thick-walled, and sometimes rough, septate, much branched, branches often opposite,  $7\frac{1}{2} \mu$  broad, ultimate branchlets numerous, short, stout, 1-2 septate. Appendages simple, dark chestnut, thick-walled, rigid, erect, septate, rounded at apex or usually variously toothed, up to 11  $\mu$  broad. *Perithecia* dark brown, globose, depressed, irregular at margin with a few adherent fibrils, 70-84  $\mu$  diameter. *Asci* not observed. *Sporidia* yellowish-brown, rather fusiform, triseptate, slightly constricted,  $19 \times 4 \mu$ .

On leaves of *Dysoxylon* sp. July. Byaneum, N.S.W. (Baker, 6).

In *Meliola bidentata*, Cke., the appendages are bidentate at the tips, but here they are more numerous and usually forming a whorl. As this is a very characteristic feature, it is embodied in the specific name.

MELIOLA CLADOTRICHA, Lev.—Branch-haired *Meliola*.

(Plate XXVIII., figs. 21-23.)

Hypophyllous. Spots roughly orbicular, black with brownish tinge, velvety, 4-6 mm. diameter, often confluent. *Mycelium* of dark brown, thick-walled, septate filaments, branching antler-like, ultimate branches tapering and more transparent, up to  $9\ \mu$  broad. *Perithecia* in groups at the centre of the spots, black, globose, fully  $\frac{1}{3}$  mm. in diameter, and covered with numerous, rigid, usually curved or flexuous, simple, septate, brown appendages. *Asci* oblong or elongated-elliptical, 4-8 spored, sessile,  $66-112 \times 26-37\ \mu$ . *Sporidia* at first colourless, then yellowish-green, finally brown, elongated-ellipsoid, triseptate,  $43-47 \times 17\ \mu$ .

On leaves of *Eugenia* sp. August. Richmond River, N.S.W. (Baker, 8).

The colourless sporidia are stained canary-yellow with potassium-iodide iodine, and both coloured and colourless may be together in the same ascus. The mycelium radiates at the circumference of the spot in the form of distinct, seal-brown, branching filaments, and the denser darker centre bears the globose perithecia in groups.

BOTRYTIS ARGILLACEA, Cooke, var. AVICENNIAE, McAlp.—

Clay-coloured *Botrytis*.

(Plates XXVII, figs. 14-17; XXVIII., figs. 18-20.)

Gregarious, firm, orbicular, tubercular, sometimes confluent; clayey-brown, rather large but variable in size; from 2 mm. to 1 cm. in diameter. *Conidiophores* densely compacted, collectively dark brown, individually almost hyaline, straight, septate, repeatedly laterally branched, and towards apex usually branched in a tri-radiate manner, contents finely granular, about  $4\frac{1}{2}\ \mu$  broad. *Conidia* produced terminally, pale yellowish to colourless, continuous, elongated-oval to ovate,  $9\frac{1}{2}-11 \times 4-5\frac{1}{2}\ \mu$ . Young tubercles are of firm consistency and black in section, but magnified the sections show light and dark coloured layers; old tubercles

crack, and the contents partially or almost entirely break up into black, firm, variously sized and shaped sclerotoid bodies which are squeezed out. The sclerotoid bodies are usually elongated with irregular outlines, and when crushed are seen to consist of a dense mass of brown or yellowish-brown septate, intertwined hyphæ, averaging  $5\frac{1}{2}\mu$  in thickness, but varying from  $4-7\frac{1}{2}\mu$ .

On bark of *Avicennia officinalis*, L. February. Ballina. (Baker, 7).

The conidiophores were recognised as resembling *Botrytis argillacea*, Cooke, figured in Grev. iii. Pl. 48, fig. 6, but the tubercles were rather puzzling. However, on sending a specimen to Professor Saccardo, he kindly replied as follows:—"I have examined your fungus on the bark of *Avicennia*. The stroma is formed by a *Hypoxyylon*, perhaps allied to *H. purpureum*, of which the conidial stage is the argillaceous Mucedine. Already Alberti and Schweinitz had a knowledge of this Hyphomycete (*Dematium virescens*). Your species approaches *Botrytis argillacea*, Cooke, only the principal hyphæ of your species seem to be shorter. It would be necessary to know the species of *Hypoxyylon* borne by *Avicennia*, but on the whole it might be made provisionally a variety of *Botrytis argillacea*." Accordingly I have given it the varietal name of *Avicenniae*.

---

#### EXPLANATION OF PLATES.

##### Plate XXVI.

##### *Fusarium byssinum*.

Fig. 1.—Under surface of large leaflet with bright orange-yellow pustules (nat. size).

Fig. 2.—Conidia ( $\times 1000$ ).

##### *Asteridium eucalypti*.

Fig. 3.—Portion of hypha with stout, uniseptate, ultimate branchlets ( $\times 540$ ).

Fig. 4.—Immature and mature sporidia, the latter with the characteristic swollen segment.

*Asterina tuberculata.*

- Fig. 5.—Under surface of leaf with black stain-like markings (nat. size).  
 Fig. 6.—Hypha showing tubercular branchlets ( $\times 540$ ).  
 Fig. 7.—Asci and two separate olive-green sporidia ( $\times 540$ ).  
 Fig. 8.—Mature sporidium, very dark brown ( $\times 1000$ ).

## Plate XXVII.

*Meliola denticulata.*

- Fig. 9.—Colourless hyphæ passing into coloured with thickened wall ( $\times 1000$ ).  
 Fig. 10.—Apex of appendages, toothed and smooth ( $\times 1000$ ).  
 Fig. 11.—Surface view of perithecium ( $\times 540$ ).  
 Fig. 12.—Young perithecium originating as a branch from hypha, in optical longitudinal section ( $\times 1000$ ).  
 Fig. 13.—Sporidia ( $\times 1000$ ).

*Botrytis argillacea* var. *avicenniae*.

- Fig. 14.—Fungus on bark (nat. size).  
 Fig. 15.—Section of tubercle (nat. size). It looks black in section, and may be solid throughout or partially broken up into sclerotoid bodies.  
 Fig. 16.—Section of small tubercle (nat. size and magnified). There is a central core of fine (whitish) fibres, an outer and inner layer of dark, dense, almost black fibres, and the rest is of a yellowish-brown.  
 Fig. 17.—Branching conidiophores ( $\times 540$ ).

## Plate XXVIII.

*Botrytis argillacea* var. *avicenniae*.

- Fig. 18.—Tri-radiate branching towards apex and apical conidium ( $\times 1000$ ).  
 Fig. 19.—Detached conidia ( $\times 1000$ ).  
 Fig. 20.—Sclerotoid bodies ( $\times 52$ ).

*Meliola clatotricha.*

- Fig. 21.—Antler-like branching hypha, also septate, but the septa are concealed by the dark colour ( $\times 270$ ).  
 Fig. 22.—Asci 4- and 8-spored ( $\times 145$ ).  
 Fig. 23.—Sporidium ( $\times 1000$ ).